

# Planning Strategies for Growth Node in Barrackpore-Barasat Sub-region (B.B.S.R), Kolkata Metropolitan Region (K.M.R)

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**Abstract**—Kolkata Metropolitan Region (KMR) has been experiencing a rapid growth of urban population. This leads to wide gap between demand & supply of employment, housing and other basic facilities. Urgent need is felt to distribute urban population and services in self-dependent growth nodes which will hold a share of metropolitan growth and services. Kolkata Metropolitan Vision 2025 identified 15 growth nodes within KMR to decentralize activities and population from metro core. Barrackpore-Barasat is one of the important growth nodes among identified growth nodes. In this dissertation Barrackpore-Barasat Sub-region (BBSR) in the North 24 Parganas district has been chosen as the study area. An attempt is being taken to signify the growth potential of Central Eastern Sub-region (CESR) with respect to the other sub-regions within KMR. BBSR has been focused within CESR and network analysis has been done to assess the connectivity of BBSR with other major growth nodes within KMR. An attempt is done to make BBSR an integral part of KMR. Within BBSR developable growth zone is identified depending on population distribution, density distribution, workers distribution, availability of infrastructure and availability of vacant land. Existing situation of identified growth zone is analyzed. A Landuse map is proposed for the zone having potential for future development and planning proposal for socio-economic infrastructure is allocated.

## 1. INTRODUCTION

Over concentration of economic and social activities in one large metropolitan center creates difficulties in harmonious development of a metropolitan area as a whole. Efforts should be given for decentralization so that economic growth would be more evenly distributed in relation to the region's population, location & services. Decentralization does not necessarily imply the creation of new towns in rural areas; rather it implies on concentrating new investment in the existing centers that have the greatest potential of developing as a growth node in a near future.

## 2. AIM

The aim of the paper is to assess the growth potential of Barrackpore-Barasat Sub-region (B.B.S.R) and arrive at a guideline for the future growth in a planned manner in order to improve the overall quality of life of the residents.

## 3. OBJECTIVES

### Objective 1

First objective is to determine the significance of Central Eastern Sub-region as a growth zone (using district level data) with respect to other Sub-regions in Kolkata Metropolitan Region.

### Objective 2

Second objective is to assess the metropolitan network of system of settlements which connects BBSR with other major growth nodes & metro core.

### Objective 3

Third objective is to identify developable zone within BBSR to accommodate overspill population of Barrackpore municipality & surrounding areas with planned provision of socio-economic infrastructure.

### Objective 4

Final objective is to develop Landuse map for identified growth zone and allocate planning proposals for socio-economic infrastructures.

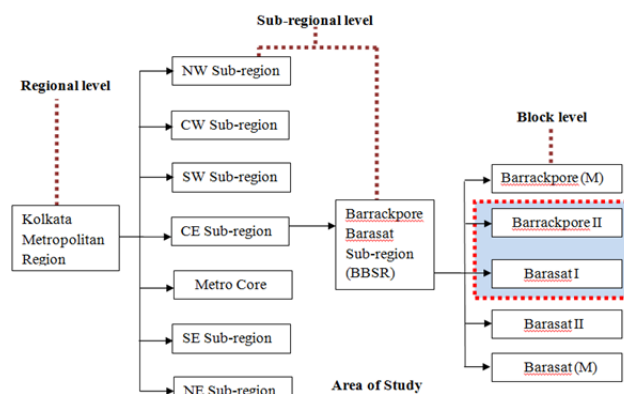


Fig. 1: Study Area

### 4. FRAMEWORK OF STUDY

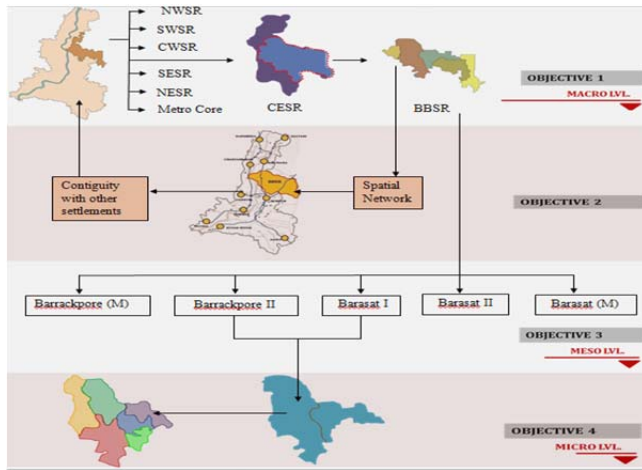


Fig. 2: Framework of Study

### 5. METHODOLOGY OF DATA COLLECTION

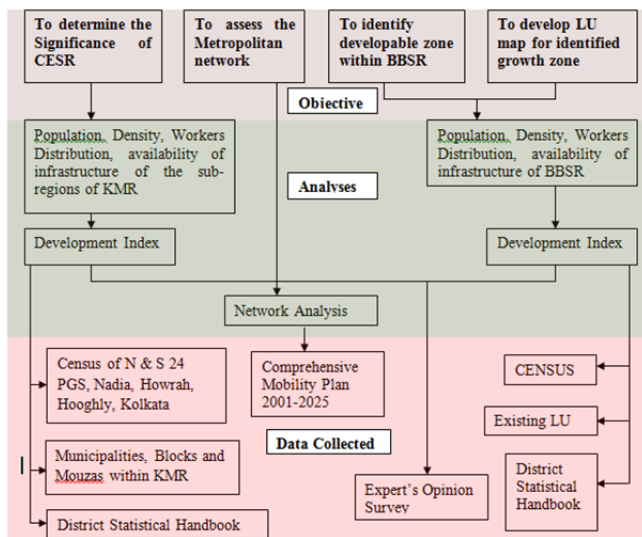


Fig. 3. Methodology of Data Collection

### 6. ANALYSES

#### Analysis for Objective 1

Kolkata Metropolitan Region has been divided into six sub-regions (NWSR, CWSR, SWSR, Metro core, NESR, CESR and SESR) by using district level data (see Fig. 5). CESR comprises mostly N 24 parganas and few part of Nadia. Sub-regions have been compared with respect to population distribution, Density distribution, Workers distribution and availability of infrastructure and Development Index is prepared to determine the significance of CESR as a growth zone with respect to other sub-regions. From the Development Index it is observed that CESR has obtained highest rank as a

growth zone (see Table 1) which mostly comprises N 24 Parganas. As BBSR comes under N 24 Parganas and identified as Major Growth node by Kolkata Metropolitan Development Authority (KMDA), it can be determined that BBSR has the growth potential to grow as a self-sufficient sub-region.

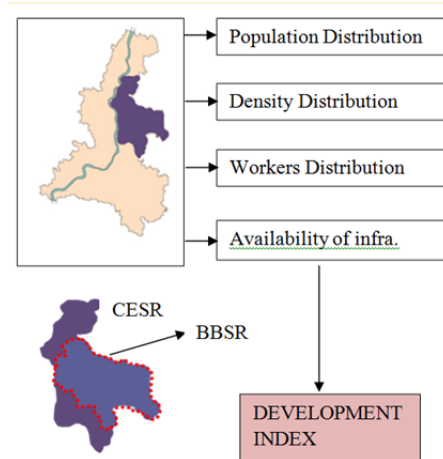


Fig. 4: Analyses for Objective 1

Table 1: Development Index for KMR Districts

District	% of Workers in Tertiary Sector (wtg 1)	Electrified units (wtg 2)	Units with DW facilities (wtg 2)	Condition of Roads (wtg 2)	Connectivity with Metro core (wtg 3)	Impact of Major Development Project (wtg 4)	Score
N 24 PGS	1	2	2	1.6	3	4	13.6
S 24 PGS	0.6	2	2	1.6	2.4	3.2	11.8
Nadia	0.8	1.2	0.4	0.8	1.8	2.4	7.4
Hooghly	0.6	0.8	1.2	1.2	1.8	2.4	8
Howrah	0.8	0.4	0.8	1.2	3	2.4	8.6

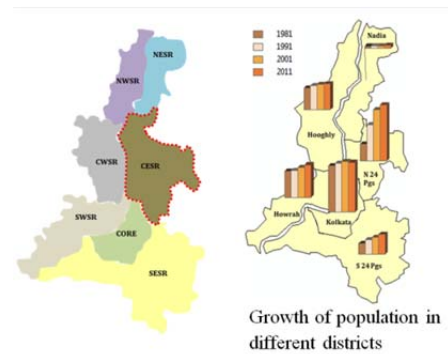


Fig. 5. Sub regions of KMR

#### Analysis for Objective 2

Kolkata Metropolitan Vision 2025 identifies 15 major growth nodes in Kolkata Metropolitan Sub-region. Barrackpore-Barasat is one of the important growth nodes among them. Objective 2 mainly deals with the contiguity of BBSR with other major growth nodes. Network analysis (see Fig. 6) is

done to assess the connectivity of BBSR with other settlements. BBSR has good railway network which connects BBSR with northern part of KMR as well as the southern part. It mainly connects with western part through Bally and Bandel bridge. It also has good connectivity through BT road and Kalyani Expressway. There are some proposals of arterials road in Comprehensive mobility plan 2001-2025 (see Fig. 7) which will increase the connectivity with north and south eastern part as well as north and south western part. Proposed Bhatpara connector and Serampore connector will directly connect BBSR with western part of KMR. Proposed eastern and southern expressway will increase connectivity with southern part of KMR. Metro rail network will be extended to Barrackpore and Barasat. There are proposals of some flyovers, underpasses, and truck terminal, bus stands in and around Barrackpore Barasat sub-region.

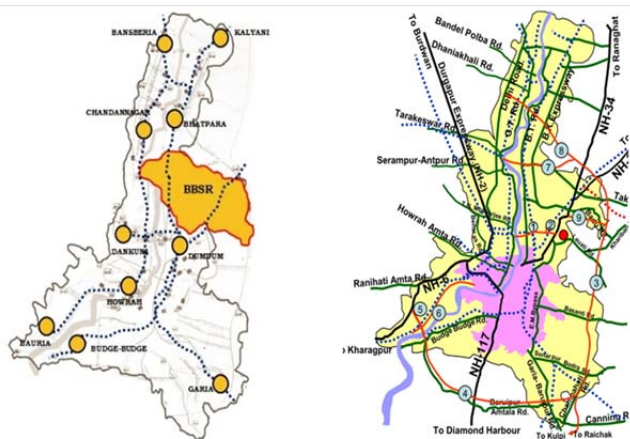


Fig. 6. Contiguity with other settlements

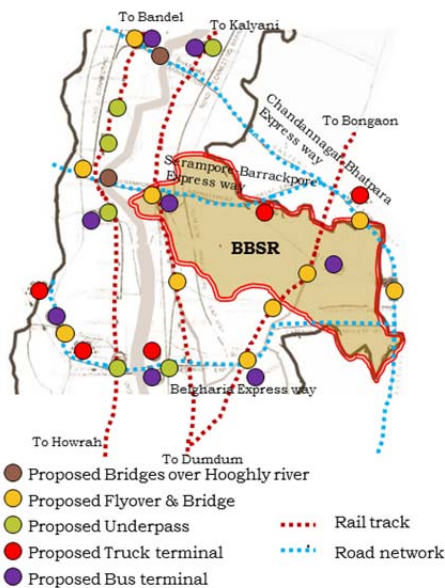


Fig. 7: Future connectivity in CESR

**Analysis for Objective 3**

Barrackpore-Barasat sub-region comprises Barrackpore and Barasat Municipality and CD Blocks. Those areas have been compared with respect to population distribution, density distribution, workers distribution and availability of infrastructure and Development Index is prepared to determine the most developable zone with respect to other areas. Scores have been given to different areas depending on the weight ages of different parameters. From the Development Index (see Table 2) it is observed that Barrackpore CD block II and Barasat CD block I are most developable zone than other areas. So focus is given to the identified growth zone.

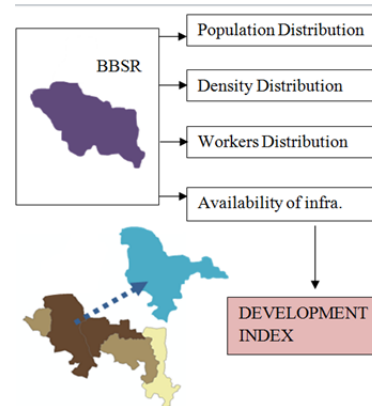


Fig. 8. Analyses for Objective 3

Table 2: Development Index for CESR

Unit Name	Avail. Vacant Land (3)	% of Tertiary Worker (1)	Growth of Tertiary Worker (1)	Growth of Primary Worker (1)	Road Cond. (2)	Impact of Major Development Project (4)	Total Score
Barrackpore (M)	0.6	1	0.2	0.6	1.6	4	8
Barrackpore II	2.4	0.8	0.8	0.8	1.6	4	10.4
Barasat (M)	0.6	1	0.2	0.6	1.6	4	8
Barasat I	1.8	0.6	0.8	0.6	1.2	3.2	8.2
Barasat - II	1.2	0.2	0.4	0.6	1.2	3.2	6.8

**Analysis for Objective 4**

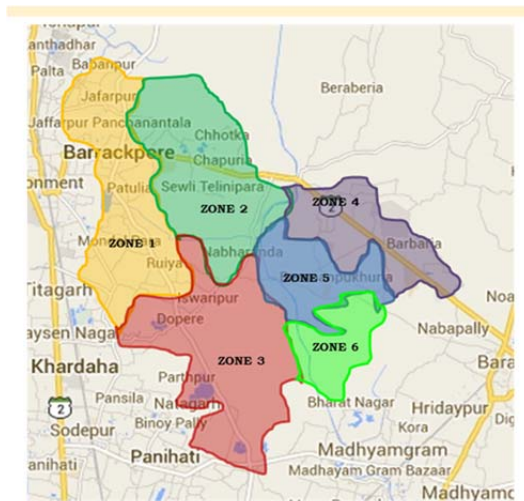
Identified area is divided in six zones (see Fig. 9). Analyses have been done for each zone depending on population, density, working population, percentage of primary and secondary workers, literacy rate, education, commercial facilities, availability of vacant land, agricultural, industrial area etc. Landuse suitability matrix is made depending on some primary criteria like transportation, distance from residential area, industrial area, commercial area and accessibility. Ranks have been given to different zones to identify the landuse suitability for each zone. From Landuse suitability matrix (see Table 3) it is observed that Zone 1 is suitable for residential (mainly infill type), Institutional, and Commercial. Zone 2 is suitable for Agricultural, Residential, and Commercial as most of the areas in zone 2 is covered by agricultural land which has high productivity. Zone 3 is suitable for Residential, Agricultural, Institutional, and



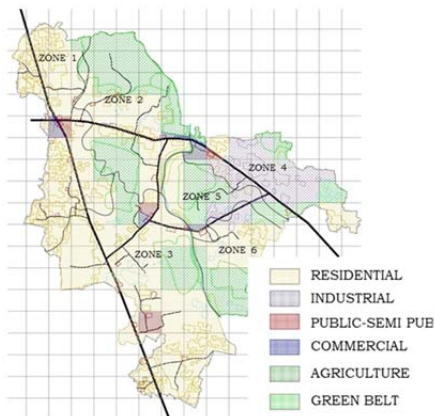
Commercial. Zone 4 is suitable for Industrial, Commercial, Green belt. Zone 5 is suitable for Industrial, Green belt, Agricultural and Zone 6 is suitable for Residential, Agricultural (see Fig. 10).

**Table 3 Land Suitability Matrix**

Primary Criteria	Sub criteria	Rank	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Transportation	Accessed by NH	5						
	High speed road	4						
	Railway	3						
	Important road	2						
Near existing Residential areas	Local road	1						
	Excellent	5						
	Good	4						
	Medium	3						
	Poor	2						
Near existing Commercial areas	Very Poor	1						
	Excellent	5						
	Good	4						
	Medium	3						
	Poor	2						
Near existing Industrial areas	Very Poor	1						
	Excellent	5						
	Good	4						
	Medium	3						
	Poor	2						
Near existing Institutional areas	Very Poor	1						
	Excellent	5						
	Good	4						
	Medium	3						
	Poor	2						
Accessibility	Very Poor	1						
	Good Intra & Inter city	5						
	Intra city	4						
	Intra city	3						
	Medium Intra & Inter city	2						
	Nothing spicified	1						



**Fig. 9. Zones in Study area**

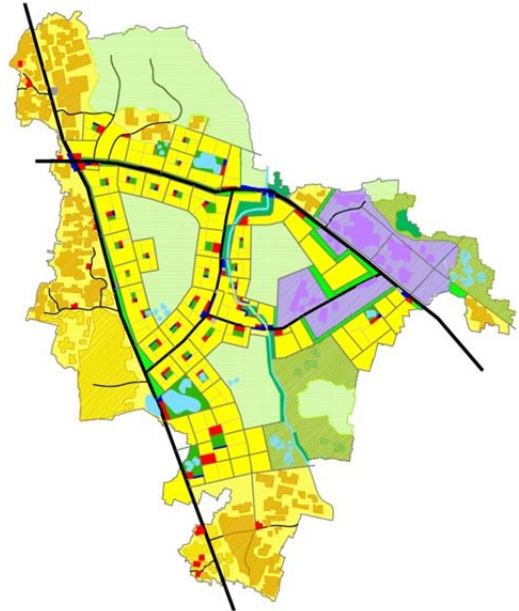


**Fig. 10. Zone wise Land suitability**

**7. PROPOSALS**

**Proposed Landuse Map**

In present condition 25% land is covered by residential area. In proposed Landuse map it is increased to 32%. 26% land is covered by agriculture in present scenario which is kept undisturbed in proposal due to high productivity. Industrial zone is proposed near the existing industrial area. Green belt is proposed on the side of Barrackpore-Barasat Road and Kalyani expressway. 5% land is kept for future development.



**Fig. 11. Proposed Landuse Map**

	Area (sq.km)	%
Residential	19.25	32
Commercial	1.82	3
Industrial	4.9	8
Public-Semi Public	3.38	6
Waterbody	1.17	2
Orchard	1.82	3

	Area (sq.km)	%
Transportation	6.9	11
Agricultural land	15.32	26
Open space	1.82	3
Green belt	0.59	1
Future dev.	2.9	5
Total	58.94	100

**Fig. 12. Percentage of Proposed Landuse**

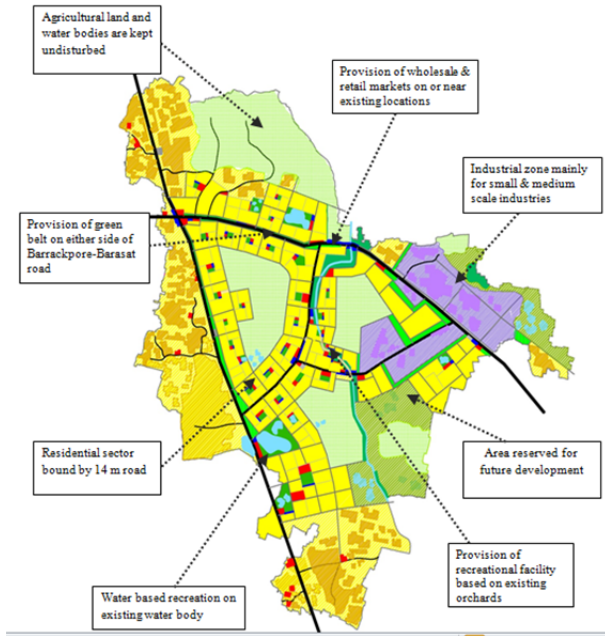


Fig. 13. Future Proposals

### 8. ROAD HIERARCHY

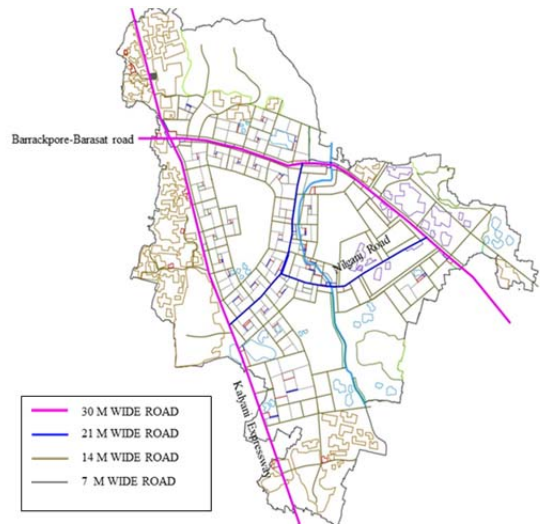


Fig. 14. Road Hierarchy

	Area (sq. km)	%
Residential	0.226	56
Commercial	0.011	3
Public-Semi Public	0.056	15
Transportational	0.043	12
Open space	0.046	10
Water body	0.016	4
Total	0.39	100

Fig. 16. Area Statement for Sector Type 1

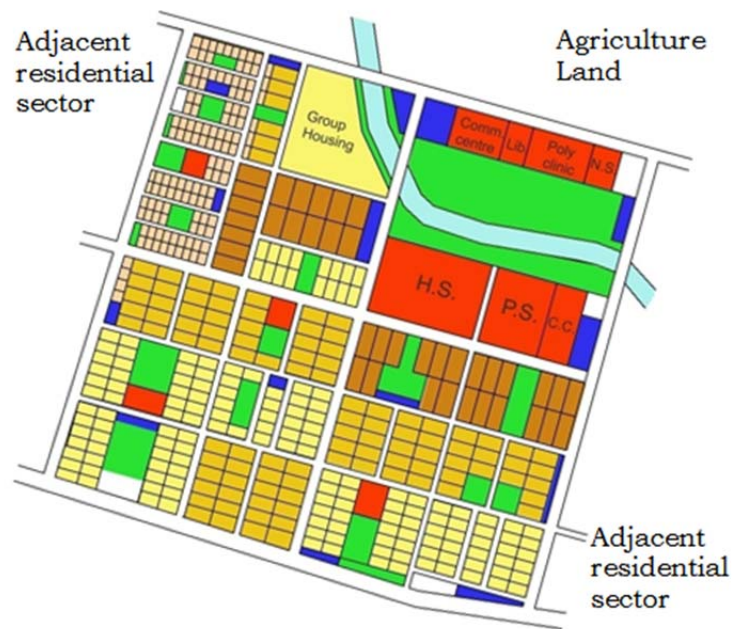
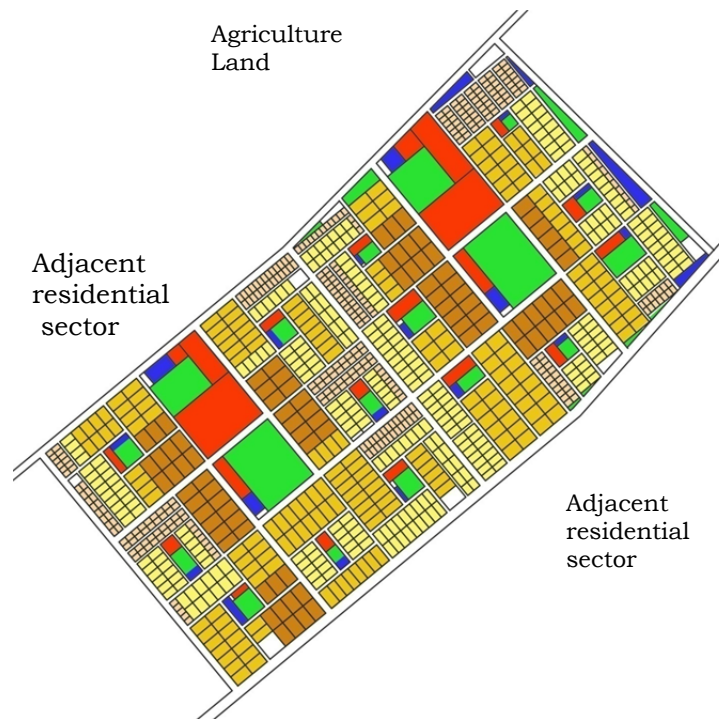


Fig. 15. Sector Type 1

**9. TYPICAL SECTOR**

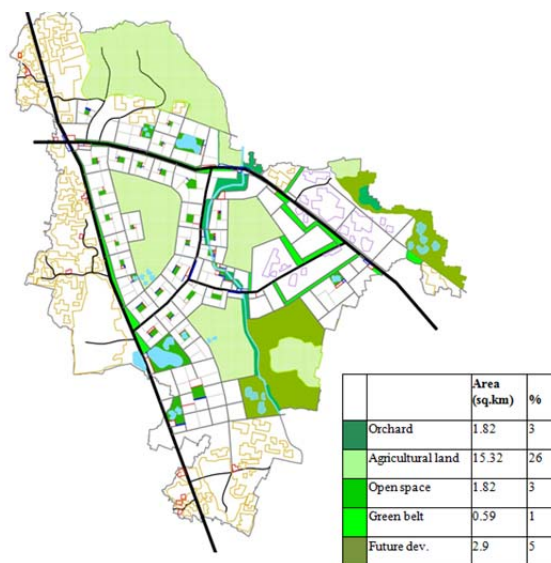


**Fig. 17. Sector Type 2**

		Area (sq.km)	%
Yellow	Residential	0.432	56
Blue	Commercial	0.023	3
Red	Public-Semi Public	0.101	13
Brown	Transportation	0.093	12
Green	Open space	0.123	16
	<b>Total</b>	<b>0.772</b>	<b>100</b>

**Fig. 18. Area Statement for Sector Type 2**

**10. OPEN SPACE SYSTEM**



**Fig. 19. Open Space System**

## 11. CONCLUSION

Growth nodes would have the capability to hold a share of metropolitan growth and services.

New growth nodes would be in or near to the fringe areas of metro core with good regional linkages, accessibility and having vacant land availability at cheaper rates. It would be provided with sufficient facilities and services to hold growing urban population.

It would act as a node in the context of sub-metropolitan area and would serve the surrounding urban, semi urban and rural areas. Growth node would be capable to provide employment to a greater percentage to the local residents and also people from hinterland.

Rural hinterland, surrounding urban and semi urban settlements should be linked up with the new growth node.

Vacant land of the planning area should be properly utilized with the provision of residential district, commercial, institutional & industrial zone keeping agricultural land undisturbed as those land have high productivity.

It is better to maintain the existing pattern of development wherever possible.

## 12. ACKNOWLEDGEMENTS

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